Pan Balance – Expressions

GRADE: 3-5, 6-8, 9-12

STANDARDS:

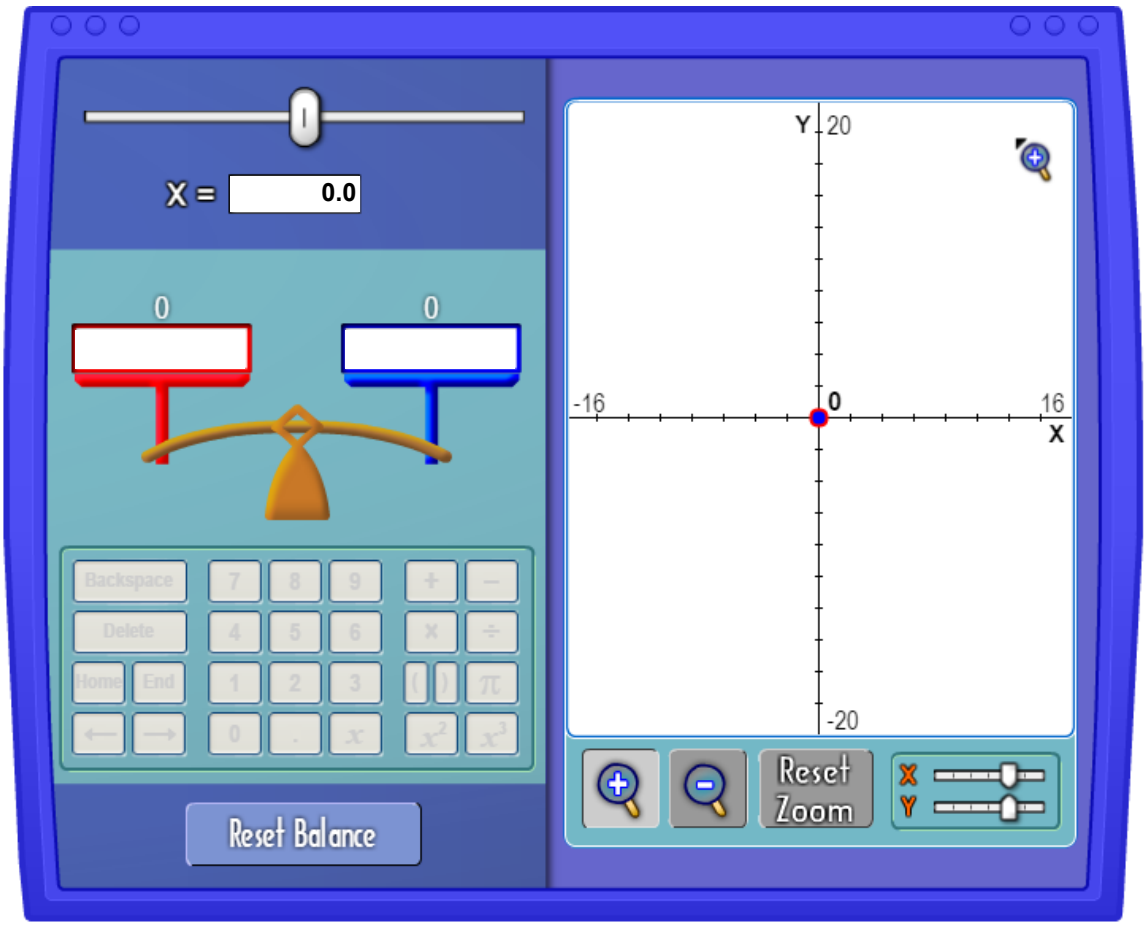
MATH CONTENT: Algebra

This interactive pan balance allows numeric or algebraic expressions to be entered and compared. You can "weigh" the expressions you want to compare by entering them on either side of the balance. Using this interactive tool, you can practice arithmetic and algebraic skills, and investigate the important concept of equivalence.

Two other tools, Pan Balance – Numbers and Pan Balance – Shapes, are natural extensions.

This interactive is optimized for your desktop and tablet.

Activity	Instructions	Exploration	Related Resources	Print All



- Place an algebraic expression in each of the red and blue pans. These expressions may or may not include the variable *x*. Enter a value for *x*, or adjust the value of *x* by moving the slider.
- As the value of *x* changes, the results will be graphed. Use the **Zoom In** and **Zoom Out** buttons, or adjust the values for the *x*- and *y*-axes with the sliders, to change the portion of the graph that is displayed.
- The **Reset Balance** button removes the expressions from the pans and clears the graph.

Explore algebraic equivalence with the following investigation.

1. Enter the expression **2*x*** into the red pan, and enter the expression ***x* + 4** into the blue pan.
2. Enter the value ***x* = -5** into the box near the top. What happens? Change the value of *x* to 0 and then to 5. How does this change the relationship between the pans?
3. Find a value of *x* such that the red pan equals 0. Where is the red dot when the red pan has a value of 0?
4. Find a value of *x* such that the blue pan equals 0. Where is the blue dot when the blue pan has a value of 0?
5. Move the slider to adjust the value of *x*. For what value of *x* do the red and blue pans have equal values? What happens in the graph when the values of the pans are equal?
6. What other observations can you make about the relationship between the values of the pans and the graph?

- 6–8 Unit: Everything Balances Out in the End
- 9–12 Lesson: Exploring Equations
- 9–12 Lesson: Exploring Equations Further